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SOME NOTES ON BAYBERRY CANDLES

A report prepared by M. W. Thomas, Jr. and W. D. Geiger in connection with the operations of the chandlers craft in Colonial Williamsburg.

GENERAL HISTORY

The use of the berries of the Bayberry bush, (Myrtle bush, Candleberry bush, Virginia Myrtle) seems to be American in origin as this species of plant has its location in the Western Hemisphere.

The manufacture of candles from the wax extracted from this bush undoubtedly had its beginnings in North America in the 17th century. We know that as early as 1689 Myrtle wax is mentioned and the fact that it was used in candle manufacture in New England is known.

In Virginia, Myrtle wax was common as early as 1700. Governor Francis Nicholson received a shipment of 26 pounds from the lower end of the peninsula in 1700. In 1705, Robert Beverley in his *The History and Present State of Virginia*, describes the Myrtle bush, its fruit, the resulting wax, and the method of manufacturing candles:

"At the Mouth of their Rivers, and all along upon the Sea and Bay, and near many of their Creeks and Swamps, grows the Myrtle, bearing a Berry, of which they make a hard brittle Wax, of a curious green Colour, which by refining becomes almost transparent. Of this they make Candles, which are never greasie to the Touch, nor melt with lying in the hottest Weather: Neither does the Snuff of these ever offend the Smell, like that of a Tallow-Candle; but, instead of being disagreeable, if an Accident puts a Candle out, it yields a pleasant Fragrancy to all that are in the Room; insomuch, that nice People often put them out, on purpose to have the Incense of the expiring Snuff.

The Method of managing these Berries, is by boiling them in Water, till they come to be intirely dissolv'd, except the Stone, or Seed, in the Middle, which amounts in Quantity to about half the Bulk of the Berry; the Biggest of which is something less than a Corn of Pepper."

The Swedish naturalist, Peter Kalm, described on his visit to the colonies in 1748 the same procedure.

"October 13th. There is a plant here, from the berries of which they make a kind of wax or tallow, and for that reason the *Swedes* call it the *Tallow Shrub*. The *English* call the same tree the *Candle-berry-tree*, or *Bayberry-bush*; and *Dr. Linnaeus* gives it the name *Myrica*

cerifera. It grows abundantly on a wet soil, and it seems to thrive particularly well in the neighborhood of the sea, nor have I ever found it high up in the country far from the sea. The berries grow abundantly on the female shrub and look as if flower had been strewed upon them. They are gathered late in autumn, being ripe about that time, and are then thrown into a kettle or pot full of boiling water; by this means their fat melts out, floats at the top of the water, and may be skimmed off into a vessel; with the skimming they go on till there is no tallow left. The tallow, as soon as it is congealed, looks like common tallow or wax, but has a dirty green colour; it is for that reason melted over again, and refined; by which means it acquires a fine and pretty transparent green colour; this tallow is dearer than common tallow, but cheaper than wax. In *Philadelphia* they pay a shilling *Pennsylvania* currency, for a Pound of this tallow, but a pound of common tallow only came to half that money, and wax costs as much again. From this tallow they make candles in many parts of this province, but they usually mix some common tallow with it. Candles of this kind do not easily bend, nor melt in summer as common candles do; they burn better and slower, nor do they cause any smoke, but rather yield an agreeable smell, when they are extinguished. An old *Swede* of ninety-one years of age told me, that this sort of candles had formerly been much in use with his countrymen. At present they do not make so many candles of this kind, if they can get the tallow of animals; it being too troublesome to gather berries. However, these candles are made use of by poor people, who live in the neighborhood of a place where the bushes grow, and have not cattle enough to kill, in order to supply them with a sufficient quantity of tallow. From the wax of the candleberry tree, they likewise make a soap here, which has an agreeable scent, and is best for shaving. This wax is likewise used by doctors and surgeons, who reckon it exceeding good for plasters upon wounds. A merchant of this town once sent a quantity of these candles to those *American* provinces which had Roman Catholic inhabitants, thinking he would be well paid, since wax candles are made use of in the Roman Catholic churches; but the clergy would not take them. An old *Swede* mentioned that the root of the candleberry tree was formerly made use of by the Indians as a remedy against the tooth-ache, and that he himself having had the tooth-ache very violently, had cut the root in pieces

and applied it around his tooth; and that the pain had been lessened by it. Another *Swede* assured me, that he had been cured of the tooth-ache, by applying the peel of the root to it. In Carolina, they not only make candles out of the wax of the berries, but likewise sealing wax."

Bayberry candles were popular throughout the 18th century. They burned with a clear flame, they were not greasy and gave the opposite of the unpleasant odor of tallow candles. They were expensive in comparison to tallow candles and this is readily understandable when one considers the labor problem in securing the berries. However, the wealthy Virginian could supply the labor and the berries were available in abundance to those who had time to secure them. On the other hand, the bayberry candle was not as expensive as the spermaceti and beeswax candles of the period.

The bayberry candle was much in demand in the fine houses of Colonial Virginia. The Ludwells and Lees mention the desirability of these candles, and a royal governor, Baron Botetourt lists them in his inventory of 1770. Williamsburg merchants sold candlesticks designed to hold $\frac{1}{2}$ pound green wax candles in 1771.

As early as 1752 the desirability of these candles can be seen in the fact that Virginia was exporting Myrtle wax candles in sizeable amounts.

In contrast to the use of these candles by the gentry was their use by the poor farmer of Tidewater Virginia and the Carolinas. Mark Catesby in his, *The Natural History of Carolina*, describes the method of securing these candles by poor families as early as 1722.

"In November and December, at which times the berries are mature, a man with his family will remove from his home to some island or sand banks near the sea, where these trees most abound, taken with him kettles to boil the berries in. He builds a hut with Palmeto leaves, for the shelter of himself and family while they stay, which is commonly three or four weeks. The man cuts down the Trees, while the children strip off the berries into a porridge-pot, and having put water to them, they boil them till the oil floats, which is skim'd off into another vessel. This is repeated till there remains no more oil. This, when cold, hardens to the consistence of wax, and is of a dirty green colour. Then they boil it again, and clarify it in brass kettles, which gives it a transparent greenness. These candles burn a long time, and yield a grateful smell. They usually add a fourth part of tallow, which makes them burn clearer."

OBTAINING THE WAX

The Bayberry is common to the East coast from Maine to Florida, growing most abundantly near the seashore. There appear to be several varieties of the shrub, some of which produce larger quantities of wax than others. It has been observed that bushes in the vicinity of Williamsburg yield the most berries where they are well watered, i. e. the banks of streams or ponds. The berries occurring in this locality are only $\frac{1}{2}$ to $\frac{1}{3}$ as large as those found in Massachusetts and Connecticut, in spite of the fact that the bushes here are larger

and more vigorous. Berries are available on the bush from mid-summer until mid-winter. They gradually change in color from pale green in summer to a bluish green in winter. The best time for gathering berries and the extraction of wax seems to be in the early fall after the time of the first frost. The berries can be gathered by hand by stripping them on to a sheet on the ground or into a pail. In an experiment it was found it required 12 man hours to harvest a 10 quart bucket of berries.

Wax is extracted from the berries by pouring them into vats of boiling water and skimming off the greenish oil which rises to the surface. This extraction process should be carried on over a period of time of at least two hours, since it has been found that all wax contained in the berries is not liberated on the first attempt. It is probable that if a device for squeezing the berries under boiling water could be devised, the yield of wax could be considerably increased and a great saving in time effected. In one series of experiments, it was found that approximately 2 quarts of bayberries give one ounce of wax. The wax which is first skimmed off the boiling vat is generally somewhat dirty and contains foreign matter. Purify the wax by boiling it twice an straining it through cheesecloth. After purifying, the wax is ready for use in candlemaking. It has been found that there is considerable variation in the color of bayberry wax. Its color may range anywhere from pale yellow to dark green. The reasons for this variation are not understood by us although it is believed they are related to the time of harvest of the berries. Color variation does not seem to affect the burning quality of the wax.

Where large quantities of candles are to be produced, it is impractical to harvest berries in this country. Mexico and South America produce large quantities of bayberry wax, which is available on the American market at about 70¢ per pound. This wax seems in all respects identical to that obtained in this country. Imported wax is sometimes dirty and requires straining through cheesecloth to remove the foreign particles. Some of it is very yellow in appearance and if attractive candles are desired, it is best to specify, "dark green," when ordering.

MELTING THE WAX

Wax for candlemaking should be melted in a metal container over a gentle source of heat. If too much heat is applied, the wax will dissolve or even catch fire and burn. Wax should not be kept molten for long periods of time since it has a very appreciable rate of evaporation. We have found that buckets of wax kept liquid all day will decrease by as much as 30% in weight. Molten bayberry wax is very liquid and can be poured like water from any suitable container. Its melting point is considerably lower than paraffin so that it can be handled readily without any danger from accidental contact with the body.

PREPARATION OF WICK

A satisfactory wick for bayberry candles may be prepared by twisting thin cotton twine about itself until the desired thickness is achieved, or, of course, it can be hand spun on the spinning wheel. Cotton seems to



Photo Courtesy of Colonial Williamsburg.

Candles are removed from the molds by dipping the molds into hot water. Notice the use of the tail of the wick as a handle. The candles are being removed from block tin or pewter molds. On the table are tinned sheet iron molds and under it are ceramic molds. Note that the freshly removed candles are placed on a rack (lower left corner) to prevent damage to their surfaces which are extremely soft.

Polishing the candles with cheesecloth is a necessary finishing operation when metal molds are used. This step is not necessary when ceramic molds are used. Note how the wick extends through the mold and is tied to a horizontal metal rod leaving a surplus piece to be used as a handle when candles are extracted. The large candles on the table are probably similar to the "one half pound green wax candles" of the eighteenth century and are designed to be used in a candle stick. This type of stick has a projecting wrought iron point which fits into a drilled hole at the base of the candle.



Photo Courtesy of Colonial Williamsburg.

produce the best wick, although flax or wool can be used. For preparing large quantities of candles it is usually necessary to purchase a commercially braided wick. There is no definite rule for the thickness of the wick, it can be best arrived at through experience. We use 24 ply wicks.

DIPPING CANDLES

Preparing candles by dipping is probably the simplest method, although it is quite laborious and does not yield candles as uniform and attractive as those prepared in molds. When candles are to be dipped, the vat of wax should be heated just above the melting point and if possible held at that temperature by surrounding the vat with a jacket into which hot water can be poured. This latter device is not absolutely essential. The dry wick is dipped into the open vat, withdrawn, allowed to cool and dipped again. After several dippings, the wick must be straightened by hand, as it will generally develop a curved condition. It is possible, of course, to keep the wick straight by attaching a weight to the wick end. The art of dipping candles must be learned through experience, but in general it is important that the temperature of the wax be carefully controlled, that the wick be kept straight, that the candle be submerged in wax to exactly the same point each time and that sudden changes of temperature and drafts be avoided. Correct timing, that is, the amount of time the candle is left in the wax and amount of time it is given to cool between dippings, is most important. After repeated dippings wax begins to build up below the end of the wick and can be trimmed off from time to time, if the vat is deep enough, it can be allowed to build up and be cut off after the candle is finished. Generally, between 50 and 60 dippings are necessary to produce an average size candle and this will ordinarily require about an hour. It is, of course, possible to speed up this whole process by constructing racks, whereby a large number of candles can be dipped at one time. After repeated dippings and trimming to desired sizes, nothing remains to be done but to trim and polish the candle to remove minor imperfections.

MOLDING CANDLES

There are three well known types of candle molds. One type is made of tinned sheet iron, one type is made of heavy block tin or pewter and still a third type is made of glazed earthenware. The operation for all three types of molds is much the same. Tinned iron molds are the most common and produce, in general, the least attractive candles since they nearly always contain a ridge where the metal was joined and minor imperfections due to careless handling. Block tin molds are much more satisfactory both from the standpoint of ease of operation and quality of the finished product. Molds of glazed earthenware probably produce the best looking candles of all, but they are quite rare and difficult to obtain. Molds are prepared for use by first cleaning them thoroughly on the inside and removing every trace of moisture. This latter is quite important since droplets of water will cause white specks in the finished candle.

The wick is prepared for use by first tying a large knot in one end, then the unknotted end of wick is drawn through the aperture in the apex of the candle mold with the aid of a small wire. The knot is pulled tight against the aperture and the wick is secured in position by tying it firmly to a stick or rod attached at right angles to the mold itself. There is usually a provision on the rack in which molds are held for accommodating this rod. It is quite important that the wick be stretched in the exact center of the mold and that the knot be large enough to form an effective stopper for the aperture. Most candle molds are so arranged so that from 6 to 24 individual molds can be positioned at one time on a single rack.

After the molds are prepared, the melted wax is slowly and carefully poured into them until they are quite full. Then as the wax cools and shrinks, more must be added so that the molds are kept full at all times. Oftimes, when pouring, some wax will leak out of the aperture at the apex of the mold. Generally, however, this leakage stops as the wax begins to cool. The spilled wax can be salvaged and used again.

Wax should be allowed to set in the molds until it is quite hard and brittle. This takes anywhere from 2 to 12 hours, depending on room temperature. It is best not to cool the molds too rapidly since this will sometimes result in a whitish discoloration on the surface of the candle.

After the wax is thoroughly cooled, the wick is cut from the supporting crossrod. Care should be taken that enough excess wick is left so as to form a handle for withdrawing the candle. The knot is then carefully cut from the apex of the candle and the individual mold freed from its supporting rack. Candles are removed from the molds by first immersing the mold in hot water and quickly withdrawing it. Then the candle is withdrawn from the mold by gently pulling on the excess piece of wick which remains at the base of the candle. In the case of tinned sheet iron molds where rack and molds are generally made as one piece, the entire unit is dipped in hot water at one time. A mold must not be held too long in hot water as a large amount of the candle will be melted away. On the other hand, too much force must not be applied in withdrawing the candle since bayberry wax is extremely brittle and subject to breakage unless carefully handled. After the candle is withdrawn from the mold, it is readied for use by trimming off the excess wick and by polishing with a soft cloth. It should be noted that if glazed earthenware molds are used, candles are removed not by dipping in hot water, but by dipping in ice water. This causes the candle to shrink from the side of the mold so that it can be withdrawn. Candles cast in earthenware molds usually require very little polishing.

BURNING CANDLES

Bayberry candles burn with a clear even light and a slight fragrance. This fragrance is most noticeable when the candle is extinguished and smoke rises from the still glowing wick. Bayberry candles burn quite

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THE MYSTERY OF THE SHOE PEG

By RAYMOND TOWNSEND, *Colonial Williamsburg*

The shoe-peg is an insignificant looking little sliver of wood, yet an important item, that advanced the construction of the shoe many steps toward its present day mass production. It is a sliver of wood on the average of half an inch long, an eighth of an inch in diameter, made of a hard wood such as maple and used to fasten the upper to the sole, and the soles to each other. When did these "wooden nails" come into use? Were they used in the eighteenth century as a few authors have said, or are they strictly a nineteenth century invention? This is the problem that confronted the researcher. Let us examine the evidence as he uncovered it.

He first turned to the easiest available material — secondary sources, which he labeled—exhibits A.

Exhibit A-1: An encyclopaedia stated: "The first invention that materially changed the method of the shoemaker was the use of the wooden pegs instead of thread for fastening soles and uppers together. With their adoption about 1815 on the cheaper grades, the development of the modern shoe factory began."¹

Exhibit A-2: A patent to Samuel B. Hitchcock and John Bennet for the manufacture of pegged boots & shoes.² In checking the above source of information the researcher found the following: *Exhibit A-3:* "Messrs. Samuel B. Hitchcock and John Bennet, of Concord (N.H.), have invented a method of pegging boots and shoes, which not only expedites the work, and relieves the workman from the necessity of sitting bent forward and drawing the wax end, by the strength of the arms, but also renders the work neater and more durable. This mode is now practised in New York, and very generally in Connecticut. The Editor has seen those pegged shoes, and can attest their neatness and durability."³ This quotation is from an early nineteenth century publication and the author writes as if he had never seen pegged shoes before this invention.

Exhibit A-4: A mechanical dictionary: (shoe pegs) are said to have been invented by Joseph Walker of Massachusetts . . . about 1818."⁴

Exhibit A-5: An English authority writes: "Hand-pegging, that is, the attaching of the bottoms of boots to the uppers by means of wooden pegs—was introduced into England from America about 1851 by Mr. Josiah Walker, head of the firm of Walker and Abbott . . ." A foot note reads: Pegging is now done by machinery. The pegging machine was introduced into Northampton by Mr. Thomas Tebbutt . . .⁵ (G. M. Tebbutt & Son commenced in 1843). Northampton was the shoe center of England in the eighteenth century. How strange that pegs were not introduced there until the middle of the nineteenth century.

Exhibit A-6: A book of early patents reveals that the first reference to shoe pegs was in 1812 when a patent was issued for pegged shoes to Robert U. Richards, a New Englander. A pegging machine was patented in 1829 and patents were granted in 1832. A machine for by Nathan Leonard of New Hampshire and other ma-

punching and pointing wooden pegs was patented in 1848. The pegging haft, deemed one of the most useful tools among the minor inventions connected with shoe manufacture, was patented as early as 1833 by Herrick Aiken of Massachusetts.⁶

Evidence from secondary sources would certainly indicate that the shoe peg was a nineteenth century invention and places the date about 1811. Was this enough evidence? By no means! The researcher now started to examine various eighteenth century original sources, which he labeled exhibits "B."

Exhibit B-1: The eighteenth century day book and ledger of one Francis Jerdone, a merchant of Yorktown in the British Colony of Virginia was carefully searched (1737-1772) and revealed the following transaction: Jerdone imported and sold to James Muir, shoemaker of Louisa County, Virginia in 1766, shoe thread, awl blades, and nails. Jerdone sold merchandize both wholesale and retail including shoes and shoemakers tools. His journal mentions shoe twine, thread, tacks, awl blades, hammers, pinchers, nippers, lasts, wooden heels, and knives. In his entire journal, however, there is no mention of shoe pegs or pegging tools. Of the shoes he imported and sold, he mentions: "mens boun'd pumps; men's stitched and bound pumps; men's best shoes boun'd and stitched and plain men's shoes." There is no mention of pegged shoes.⁷

Exhibit B-2: Another Merchant, Mr. William Lightfoot, of Virginia, sold shoes and shoemaker's necessities but did not mention pegs, pegged shoes, or pegging tools.⁸

Exhibit B-3: In the eighteenth century guardians were required to keep account of money spent from the estates of orphans under their care. A series of accounts from 1736 to 1823 were examined and the following references are typical of what was found:

"Account of William Kirby orphan of Thomas Kirby, dec'd."

1777—leather, thread and soling a pair of shoes 3/
soling and leather for a pair shoes 2/
soling and capping a pair 4/.

1779—paid for making a pair shoes 12/
to paid for thread 20/9

Exhibit B-4: The accounts of Norton and Sons, merchants of London and Virginia reveal the following:

James Carter, merchant of Williamsburg, ordered
January 10, 1771:
12 lasts for Negro Shoes,
20 lbs strong shoe thread for Negro shoes.
2000 hob nails.

Robert C. Nicholas, merchant of Williamsburg, ordered 15th October, 1773:

500 m. Hob Nails for the Heels & 10,000 m. do for the Soles of shoes.

N.B. the first to be longer than the last, which are desired to be according to the sample sent.

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The two shoes on the left of this picture are of the 18th century and were found while restoring a colonial house in Williamsburg, Virginia. Note the fact that the shoes are made on a straight last and have pointed toes. The wooden pegs used to attach the heel lift can be faintly seen. The next shoe is a pegged brogan of the 19th century type while the last shoe has a stitched sole of the type used in the 18th century. Both of the latter shoes are also made on a straight last. At the bottom of the picture are a number of typical shoe pegs.

Photo Courtesy of Colonial Williamsburg.

Cathern Rathell, Milliner of Williamsburg, ordered 20 January 1772:

6 Dozn. of either Didsburys or Carpuess best & neatest shoes, half of them very Stout Wax Leather, the other Dress, Stitched Heels & long hind quarters from ye largest to the smallest size.

Hob nails for heels and soles, thread for shoes were imported, but no mention of pegs, etc.¹⁰

Exhibit B-5: For several years Washington ordered shoes from the famous London shoemaker John Didsbury. From Mount Vernon on September 28, 1763, he wrote: "Sir: The last Cargoe of Shoes you sent me, fit very well, . . . You will please to send me . . . the following Shoes . . ." "For myself: 2 pr. neatest stitched and 6d. Pumps."¹¹

Exhibit B-6: There is no better source of primary material than eighteenth century newspaper advertisements of shoemakers and merchants who sold shoes. Copies of many newspapers of Virginia, South Carolina, Pennsylvania, Rhode Island, Massachusetts, and Maryland were checked into the early nineteenth century and there

was no mention of shoe pegs or pegged shoes in this period.¹² The following are examples:

1759—Advertisement of Robert Lyon, Merchant of Williamsburg, Virginia:

Best Stitched and bound shoes and pumps, plain shoes and pumps.¹³

1774—George Wilson, Shoemaker of Williamsburg, advertised for:

"Two or three journey-men shoemakers, will have good set of summer work, by applying early, at the rate of 3s. 6d. for plain shoes, 5s. stitched work, and 10s. for boots. . ."¹⁴

1794—The New York Shoe Store, Richmond, Virginia, advertised: Ladies seal skin shoes, slippers, sandals, morocco slippers, sattinet, lustring, and calimanco. Girls' shoes, slippers, and sandals: Boys' fine and strong shoes, of all sies: Childrens' shoes, ditto, morocco; Mens' and Womens' coarse shoes, Gentlemens' fine shoes, lined and bound seal-skin, double vamps and quarters, etc.¹⁵

Since no eighteenth century mention of pegged shoes was

found it was considered logical to search on into the following century to find when they were mentioned. Pegs are first mentioned early in the second quarter of the nineteenth century. The following are a few examples:

1834—"The 'New Boot and Shoe Factory' of James H. Lee and Andrew Dayhuff, Annapolis, Maryland, advertised among various kinds of shoes: "... on hand our own make Gentlemens' sewed and pegged Boots."¹⁶

1836—Henry Goddard, Claremont, New Hampshire, advertised Boots & Shoes and "Shoe Pegs For Sale, wholesale and Retail."¹⁷

1836—"At the Sign of the Lady's and Gentlemen's Boot and Shoe, ..." among shoes sold were "Gentlemens' Calf Boots, sewed and Pegged, ..." ¹⁸

This appears to coincide with the invention of the pegging machine, (1829-32), which made it possible to use pegs in mass scale.

Exhibit B-7: Numerous inventories of deceased persons of the eighteenth century were checked in the York county (Virginia) records and several in Maryland records but there is no mention of shoe pegs or pegging tools. However "awls, rubbing sticks, Punches, rasps, nippers, pinchers, shoe tacks, nails, and thread," were mentioned quite often.¹⁹ An excellent example of a shoemaker's inventory revealed:

"Tongs, hammer, whetstone, punch, cutting knives, paring knives, rasp, awls, benches, lasts, leather, womens heels, bees wax, pitch, tallow, hemp, flax, yarn, and knives to cut wood heels."²⁰

In Colonial Williamsburg's restored Boot and Shoemakers shop a hand pegged pair of shoes was constructed. There are 136 pegs in each sole! A total of 272 little slivers of wood to make one pair of shoes! How many pairs of shoes could the shoemakers turn out if he had to whittle these little pegs all by hand before he could construct them? It appears that stitching or nailing would be less confining or time consuming.

The evidence thus far accumulated strongly indicates that the shoe peg was neither used nor invented until the nineteenth century. Would you not say the researcher was justified in reaching that conclusion?

However, several months later the researcher in reading an eighteenth century Maryland gazette ran across an advertisement of a merchant listing a "pegging awl" among some shoemaker's tools for sale. Unfortunately he failed to make note of this but it stayed with him in his thoughts—"Have I unjustly condemned the shoe peg? He decided to re-open the case and made a trip to the Smithsonian Institute to examine eighteenth century shoes. He did not find any eighteenth century men's shoes, but they did however allow him to closely examine several pair of ladies' shoes. He found on one pair that the leather lift of the heel was stitched around the edges and fastened in the center with two wooden pegs. On another pair, the heel lift was stitched, no pegs, but the outer sole as it followed the arch and down the front of the heel, had one wooden peg close to the bottom. Well; what better proof of the existence of the wooden shoe peg than actual visual evidence such as

this. In a secondary source, which had not been available to him before, he found a statement that shoe pegs have been used as early as the sixteenth century to attach the sole to the upper. No original source was given for this remark so he could not check it.²¹

The researcher then turned to Diderot, the French encyclopediast of the eighteenth century. Translation revealed that soles were stitched and also leather heels, with no mention of pegging the soles. However on wooden heels, two leather lifts were placed on the bottom and secured by "petites chevilles de bois"—small wooden pegs.²² Definite proof that pegs were used by the eighteenth century shoemaker. Here we go again! The researcher's hair turned a shade grayer. Could he say from this new evidence that pegs were used; but only in attaching leather to wooden heels? Recently Colonial Williamsburg in restoring an eighteenth century home found an old pair of shoes between the walls. These shoes are unquestionably of the eighteenth century, and are mule style ladies' leather slippers. Upon close examination the soles were found to be stitched and the heel, which was formed by placing several layers of leather lifts between the back of the sole and the insole was pegged.

Since the shoe-peg had to be made by hand in the eighteenth century and since as many as 272 were required to construct only one pair of shoes, one can draw

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Photo by Courtesy of
Colonial Williamsburg

Close-up of the heel of one of the shoes shown in the picture on page No. 6. Here the "petites chevilles de bois"—small wooden pegs can be clearly seen. This photograph alone should clearly prove that shoe pegs were occasionally used in the 18th century for heel construction.

The Chronicle

Early American
Industries Association, Inc.

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men, and other workers.

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Communications regarding the contents of The Chronicle should be addressed to the Editor; regarding back numbers to Loring McMillen; suggestions for members to any of the Officers; all other matters to the President. Addresses as here given.

DUES

The annual dues are payable January 1st, and are as follows. Regular members \$5.00; Supporting members, \$7.50; Sustaining members, \$10.00 and up. There is no distinction between classes, except the amount of dues, but The Chronicle cannot be financed unless a considerable number of the members pay more than \$5.00. Each member is expected to voluntarily place himself in the class which represents the amount he is willing to contribute to the support of the Association for the current year. Life membership costs \$50.00. The Chronicle is sent to all members without additional charge.

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PRESIDENT'S LETTER

To The Members Of

The Early American Industries Association:

Greetings to all of you and may 1953 be the healthiest and happiest year yet.

It seems fashionable for everyone to have a project and mine for 1953 is to devise a way to get more of our members to join with those of us who attend rather regularly the spring and fall meetings of the Association. Those who have come to any of the meetings in the recollectible past, have met keen and interesting folks, have added to their store of knowledge, and have generally had a good time.

But what can your directors do to get more of you members to participate in these meetings?

We have tried to keep the cost down to the minimum and the chairmen and chairwomen have been able to get many charges waived by the host institutions. We have been announcing the place and dates of the meetings far in advance (witness the forthcoming Shelburne, Vermont, and Williamsburg, Virginia, meetings announced in this issue) so that members can plan to include in the programs a variety of tours and events that would include at least something of vital interest to each member. We have arranged the programs to cover three days so those who come a long distance can see and do everything and we have arranged the most important events for Saturday so those who come for only one or two days can enjoy the most important part of the program. All this has, as yet, only added a few to the "regular comers." Your President and Directors would welcome your suggestions. Will you help in this project for 1953?

Our most recent meeting in Salem, Massachusetts, was held in conjunction with the Rushlight Club, which is this year celebrating its 25th Anniversary. It was one of the most interesting and enjoyable meetings I have ever attended. May I, at this time, as President of the Early American Industries Association, officially thank each and every one of the Committee Members who made this meeting such an outstanding one? I again thank Mrs. Franklin A. Hebard, President of the Rushlight Club, its Officers and Members for making our meeting with them so pleasurable and educational.

The Committee for the Salem Meeting consisted of L. S. Cook, Chairman; Bertram Little, Co-Chairman; Julius Daniels, Program Chairman; C. A. B. Halvorson, Treasurer; Mrs. C. A. B. Halvorson, Registration.

Your President herewith expresses the heartfelt thanks and deep appreciation of the members of EAIA to our beloved Mrs. Frank D. Peirce for having for so long so ably and inspiringly edited The Chronicle for us. Josephine, as Mrs. Peirce is affectionately known to her host of friends and admirers, has never wavered in her faith and enthusiasm for our Association and her devotion to the Chronicle has long been an inspiration to your Directors and Officers. It was with regret your Directors accepted Mrs. Peirce's resignation as Editor due to the pressure of her many other duties and writings.

Cordially yours,
Edward Durell, President

SALEM MEETING

By JANET R. McFARLAND, *Secretary*

The first joint meeting of the Early American Industries Association and the Rushlight Club was held in Salem, Massachusetts, with headquarters at the Hawthorne Hotel, in a three-day session, October 17-19, 1952. The first day was spent at the Essex Institute and the second day at the Saugus Restoration and the Peabody Museum, followed by a dinner at which Charles F. Montgomery, Executive Secretary of the Winterthur Museum, gave an illustrated talk on "Colonial Lighting." Programs for the first two days included demonstrations, talks and the viewing of collections of interest to both Rushlight and E.A.I.A. members. On Sunday, Mr. and Mrs. Bertram K. Little opened their Essex house, Cogswell's Grant, to the visitors, and Mrs. Edward Rushford opened for inspection her husband's famous collection of lighting devices. Mr. Lawrence S. Cooke and Mr. Bertram K. Little were Co-Chairmen of the meeting.

At the meeting of the Board of Directors and Officers it was decided that the annual meeting of the Early American Industries Association, Inc. would be held in June 1953 at Shelburne, Vermont, at which time an auction of duplicate material from members will be held for the benefit of the E.A.I.A. treasury. It was also decided to hold the fall meeting at Colonial Williamsburg in November, 1953.

The Treasurer's report showed a total of \$657.83 of which all but \$14.83 is in the Special Fund.

After thorough discussion it was voted to raise the annual dues from \$3.00 to \$5.00.

A report was given by John K. Byard, of Silvermine, Connecticut, as chairman of the membership committee. Mr. James A. Keillor, 361 Fifth Avenue, New York, was appointed chairman of a committee for regional promotion of E.A.I.A. interests.

SPRING MEETING

The Association has accepted the kind invitation of Mrs. J. Watson Webb to hold our Spring Meeting at Shelburne, Vermont. The dates will be from June 26th through June 28th inclusive. Mrs. Webb's Museum Village is relatively new and contains many things of paramount interest to members of this association. The Webb collection of horse drawn vehicles is outstanding and the collections of Folk-Art, Quilts, Dolls, Pewter and Miniature rooms collected by Mrs. Webb and displayed at Shelburne are among the finest in the country.

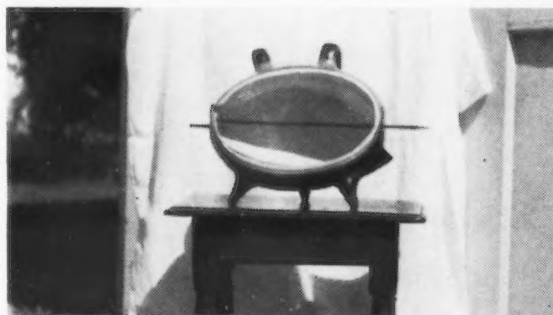
Our old friend Lewis Wiggins is Director of the Museum and we feel especially grateful for an opportunity to spend some time with him. Mr. Wiggins is a charter member of the Early American Industries Association and has long been a spark plug of the organization. Don't miss this opportunity for a really fine meeting and a new museum experience. More details will be mailed to you later but make your plans now.

Our fall meeting will be held in Williamsburg, Virginia on October 30th through November 1st.

NEW DIRECTORS

The President reports that Mrs. Josephine H. Peirce of Leicester, Massachusetts, and Mr. W. S. Redhed of Champaign, Illinois, have been appointed to the Board of Directors—Mrs. Peirce to fill the unexpired term ending June, 1953 caused by the resignation of Mrs. John H. Ballantine, and Mr. Redhed to fill the unexpired term ending June, 1954 caused by the death of Charles Messer Stow.

WHAT IS IT?



Information wanted on pottery oven shown above. It is white inside, the outside has a two to three inch rim of lavender shading to a deep purple on handles and back, all highly glazed. The iron skewer has an arrow-pointed tip and the butt is equipped with handle for turning with a spur that engages in a succession of holes to hold the roast before the fire on all sides. Length 11½", width 7½".

(Information requested by George Page Ely, Old Lyme, Conn.)

Charles Montgomery of Winterthur says: "I do recall seeing pottery with greenish yellow and lavender glaze, such as you describe, in Canada four or five years ago. At that time, I thought it probably of French origin and Mr. Downs concurs with me in suggesting that this may well have been made there."

PIONEER VILLAGE

We have just read of the establishment by Mr. Harold Warp of a Pioneer Village in North Minden, Nebraska. Mr. Warp, a native of Kearney County, Nebraska, felt that some attempt should be made to preserve an historical record of the development of the West through a display of the rapidly disappearing tools and implements used by the pioneer settlers in their westward expansion.

Mr. Warp started collecting thousands of articles some years ago and in 1950 began construction of his village. A portion of it is open at the present time and other portions will be opened later.

Some of the things which Mr. Warp has collected are: plows, cultivators, reapers, harvesters, threshers

(Continued on Page 11)



Photo Courtesy of Colonial Williamsburg.

18TH CENTURY CARTRIDGE MANUFACTURE

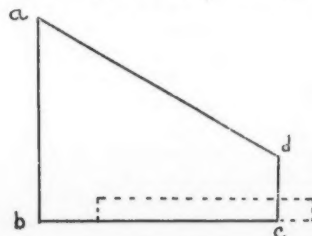
During the last half of the 18th Century it was customary for regular units of the British Army and well equipped units of Colonials to carry prepared cartridges containing a lead ball and a powder charge ready for instant use in a musket. The cartridge contained enough powder both for priming and loading. These individual cartridges were placed and carried in a special leather cartridge box. Militia units were sometimes equipped with powder horns and shot pouches, although this was considered a make-shift measure for any military unit except Riflemen, whose arms were not standardized. The equipment necessary for the manufacture of cartridges was exceedingly simple and the operation could be carried on in the field. Cartridge manufacture was an important fatigue duty for all enlisted ranks during a campaign.

The following quotation from Timothy Pickering's *An Easy Plan of Discipline for Militia*, (Salem, Mass. 1775, Part I, pp 2, 3, and Plate I) gives a complete picture of this relatively unknown operation.

"VII, the best method of making cartridges seems to be that used in the army. It is this.—Take the soft brown paper called whitish brown, or wrapping paper, and cut it into pieces of the form represented in Plate I, figure 2, which is of these dimensions; the sides *a b* measures about six inches, *b c* about five inches and a half, and *c d* about two inches. A piece of wood about

Shown here are all of the tools essential to the production of 18th Century Musket or pistol cartridges. Note the paper, cut as described in the following article and the wooden former with a paper wrapped around it. In the lower left hand corner is an eprouvette, a device for testing the relative strength of various powders and in the upper right hand corner is a soldier's leather cartridge box.

six inches long is to be made round so as to fit exactly the size of the ball; this is called a *former*: make one end of it hollow to receive a part of the ball: lay the former upon the straight edge *b c* (as represented by the dotted lines) with its hollow end about an inch from the side *a b*: roll the paper around the former; then with the ball press in the corner of the paper so as to cover the hollow end of the former; and keeping fast the ball, roll on till the paper is all wrapped round the former; having before taken a piece of twine and fastened its two ends to something that will not easily be moved, and so far apart as to leave it slack, you are now to take with the twine a single turn around the paper, below the ball; then running in the end of your fore finger till it touches the ball, pull upon the string that it may girt the paper, and by turning round the former with one hand you will presently form a neck below the ball; which being afterwards tied with a piece of coarse thread will secure the ball from slipping out: then withdrawing the former the cartridge is ready to be charged with powder; in doing which you must put in the more



because part of it is to be taken for priming: having properly filled the cartridge, twist the top, and the work is done. The size of the paper above described will serve for an ounce ball: if your ball be less, the paper may be somewhat smaller. One thing should be remembered, that if the cartridge exactly fits your firelock when the barrel is perfectly clean, it will be too large and difficult to be rammed down, when it becomes foul by firing; and 'tis dangerous firing when the ball is not rammed well home: for this therefore you are to make allowance."

PIONEER VILLAGE

(Continued from Page 9)

and other types of farm machinery. Other attractions of the Pioneer Village will be an old church, an old land office, a barber shop, a blacksmith's shop, a broom factory, a shoemaker's shop, a harness shop, a toy shop, a print shop, a country doctor's office and an old log fort. Mr. Warp's collection should make his village of particular interest to members of this association.

SHOE PEG

(Continued from Page 7)

the firm conclusion that they were not used by the majority of shoemakers in colonial times except perhaps to attach heels.

The production of shoe pegs by machine in the nineteenth century enabled the shoemaker to develop the art of pegging soles to its fullest extent.

FOOT-NOTES

1. *The New International Encyclopedia*, 2nd Edition, Volume XXI, New York, N. Y., 1925, p. 39.
2. *A History of American Manufactures from 1608 to 1860*, J. L. Bishop, Philadelphia, Pennsylvania, 1868, p. 176.
3. *Archives of Useful Knowledge*, James Meane, M. D. Volume III, 1813, p. 192.
4. *American Mechanical Dictionary*, E. H. Knight, New York, N. Y., 1876.
5. *The Romance of the Shoe*, Thomas Wright, London, 1922, p. 231.
6. *List of Patents for Inventions and Designs, Issued by the United States 1790-1848*, Edmund Burke, Commissioner of Patents, Washington, D. C., 1848, p. 295.
7. M. S., *Day Book, Francis Jerdone*, 1736-37, 1743-1745, 1750-1752, Library of the College of William and Mary, Williamsburg, Virginia.
8. M. S., *Account Book, William Lightfoot*, 1742-1764, Research Library of Colonial Williamsburg, Williamsburg, Virginia.
9. *York County Records, Virginia, 1736 to 1823*, Guardian Accounts, Yorktown, Virginia.
10. *John Norton and Sons, Merchants of London and Virginia*, Edited by Francis Norton Mason, Richmond, Virginia, 1937, pp. 151-152, 358, 218.
11. *The Writings of George Washington*, Edited by Thomas Fitzpatrick, Vol. II, Washington, D. C., 1938, p. 407.
12. *Virginia Gazette*, Williamsburg, Virginia, 1736-1780.

Richmond Enquirer, Richmond, Virginia, 1819.
The Virginia Argus, Richmond, Virginia, 1802-04, 1807, 1809, 1808, 1812.
Norfolk Gazette and Public Ledger, 1807-1816.
Virginia Herald and Fredericksburg Advertiser, Fredericksburg, Virginia, 1792-1795.
Pennsylvania Gazette, Philadelphia, 1729-1731.
Rhode Island Gazette, Newport, October 4, 1732 - March 1, 1733.
Boston Gazette, Boston, 1719-1726.
Maryland Gazette, Annapolis, 1745-1752.

13. *Virginia Gazette*, 20 November, 1759, Hunter.
14. Ibid, 26 May 1774, Purdie and Dixon.
15. *Virginia Gazette and General Advertiser*, 19 November, 1794.
16. *Maryland Gazette*, 9 January, 1834.
17. *The National Eagle*, Claremont, N. H.; 4 November, 1836.
18. *Fall River Monitor and Weekly Recorder*, (Mass.) 12 November, 1836.
19. *York County Records, Virginia, 1736 to 1823*, Yorktown, Virginia.
20. *Anne Arundel County Records, Maryland*, Book 69, Inventories, 1759-1760.
21. *The Encyclopedia of the Shoe and Leather Industry*; Hide and Leather Publishing Company, 1941, p. 317.
22. *Dictionnaire Raisonne Des Sciences, Des Arts et des Sciences*, Vol. II, Amsterdam, 1786.

ON BLACKSMITHING

One of the best known works on early English handicrafts is *Mechanick Exercises* or *The Doctrine of Handy-Works* written by Joseph Moxon near the end of the seventeenth century. This work has long been a standard reference for students of ancient implements but, as might be expected, copies of this book are not easily available except to those who have ready access to a large library. With this thought in mind, the editors of the *Chronicle* present the following excerpt from the third edition of Moxon's work, printed in 1703.

Of Brazing and Soldering.

You may have occasion sometimes to *Braze* or *Solder* a piece of work; but it is used by Smiths only, when their work is so thin, or small, that it will not endure *Welding*. To do this, take small pieces of Brafs, and lay them on the place that must be brazed, and strew a little Glafs beaten to powder on it to make it run the sooner, and give it a *Heat* in the *Forge*, till (by sometimes drawing it a little way out of the Fire) you see the Brafs run. But if your work be so small, or thin, that you may fear the Iron will run as soon as the Brafs, and so you lose your work in the Fire, then you must make a *Loam* of three parts Clay, and one part Horse-dung, and after they are wrought and mingled very well together in your hands, wrap your work with the Brafs, and a little beaten Glafs upon the place to be brazed close in the Loam, and laying it a while upon the *Hearth* of the *Forge* to dry, put the lump into the Fire, and blow the *Bellows* to it, till you perceive it to have a full *Heat*, that is, until the Lump look like a well burnt Coal of Fire; then take it out of the Fire, and let it cool: Afterwards break it up, and take out your Work.

The Chronicle

NEW MEMBERS

CALIFORNIA

Aracdia: R. J. Reininger, 143 East Foothill (1778)

CONNECTICUT

Bethany 15: Arthur B. Teasdale, Amity Road (1781)

ILLINOIS

Chicago 43: Mrs. Edna R. Meyers, 10224 Prospect Ave. (1775)

INDIANA

Attica: Mrs. Harry Van Deventer, South Brady St. (1768)

MAINE

Brownville: James Wilcoxon (1770)

Saco: V. A. Burnham, 38 Dyer St. (1789)

MASSACHUSETTS

Boston 15: Harry F. Amadon, 875 Huntington Ave., Apt. 17 (1773)

Gardner: Mrs. Ada J. Danforth, 15 Reservoir St. (1766)

Lynn: J. Sanger Attwill, 29 Atlantic Terrace (1776)

Pepperell: W. C. Cousins, 2 Park St. (1783)

Ware: Dr. Harlow W. Angier, 90 South St. (1782)

Worcester: George P. Ames, 3 Alexander Road (1786)

NEW HAMPSHIRE

Ossipee: Stephen Carleton Rogers, Box 145 (1791)

NEW JERSEY

Mountville: Oren F. Browning, Jr., Change Bridge Road (1767)

Trenton: Fred W. Van Orden, 653 Rutherford Avenue (1779)

Mrs. Jane Cook Van Orden, 653 Rutherford Avenue (1780)

NEW YORK

Buffalo: Wilbur H. Glover, 19 Linwood Avenue (1785)

Marlborough: Mrs. Elizabeth H. Plank (1795)

New Rochelle: Tom Campbell, 1120 North Avenue (1794)

New York City 17: Irene B. Colligan, 8 East 48th Street (1787)

New York City 3: Malcolm E. Little, 7-12 Washington Square, N. (1796)

New York City 17: Howard Stephenson, 10 East 43rd Street (1788)

Roslyn: Dr. Roger Gerry, 207 East Broadway (1784)

Staten Island: Marjorie Kerr, 1476 Richmond Road (1792)

Staten Island: Margaret Robinson, 45 Elm Street (1793)

Stony Point: Cordelia Hamilton, (1790)

White Plains: James A. Keillor, Jr. 54 Sunset Drive (1774)

OHIO

Cincinnati 27: Frederick V. Geier, Old Indian Road (1771)

Cleveland: William H. Ritz, 1798 Crawford Road (1772)

Worthington: Mrs. Mary S. Bowser, 5578 Riverside Drive (1769)

PENNSYLVANIA

Berwick: Mrs. Hortense E. Hagenbuch, 313 East 4th Street (1777)

CHANGE OF ADDRESS

Mrs. Edward C. Fales, 921 Fairway Drive, N.E., Warren, Ohio

F. Hal Higgins, 90 Grand View Place, Walnut Creek, California

Miss Helen S. Johnson, 968 Laurel Avenue, Bridgeport, Conn.

James E. Legg, 4155 Wilkie Way, Palo Alto, California
C. J. Nuttall, 660 Madison Avenue, New York 21, N.Y.
J. P. Remensnyder, P. O. Box 287, Ossining, New York
R. D. St. John, 465 Tenth Street, San Francisco 3, California

MAIL RETURNED

If you know the present address of these members, please let us know.

John S. Gildersleeve, 28 Locust Street, Garden City, L.I., N.Y.

Mrs. Myra Linton, 15 Alice Street, Norwich, Conn.

Mrs. Gleason M. McBane, Route No. 2, Chardon, Ohio

Miss Blanche M. Nolan, 50 East 77th Street, New York City

W. Otis Mason, 207 Windsor Street, Westminster, South Carolina

BAYBERRY CANDLES

(Continued from Page 4)

rapidly and they are by no means dripless. The wax which would otherwise be wasted by the drip from these candles can be salvaged and re-used again along with the stub from the candle itself. Bayberry candles do have one important advantage over paraffin candles and that is that they will never sag or bend in hot weather. They retain an upright position until they are heated almost to the melting point.

It is possible to stretch your supply of bayberry wax by diluting it with stearic acid or with paraffin, but this is not generally recommended since it will, of course, tend to destroy some of the desirable characteristics inherent in bayberry wax itself.

It is characteristic of bayberry candles that they will occasionally, while burning, misbehave and melt themselves into a puddle of wax. Too large a wick will aggravate this condition. The candle will also burn unevenly if used in an exposed place where it is subjected to drafts.

